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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,935	01/26/2004	Michael R. St. John	7773	9633

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EXAMINER

CORDRAY, DENNIS R

ART UNIT PAPER NUMBER

1731

DATE MAILED: 10/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/764,935

Applicant(s)

ST. JOHN ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's amendments, filed 8/28/2006, have overcome the rejections of claims under 35 U.S.C. 102(b). Accordingly, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejection are made under 35 U.S.C. 103(a) as detailed below.

Applicant argues that limiting the range of molecular weight to be above 100,000 overcomes anticipation of the range by Underwood et al. Applicant also argues that Underwood et al does not state that the upper limit of the molecular weight is about 100,000. Underwood et al states that "The resulting AM-DADMAC copolymer has an equivalent molecular weight that is generally in the range from about 500 to 100,000 daltons" (col 4, lines 1-4). While, the statement does not explicitly say that the upper range is "about" 100,000, the use of the word generally preceding the range indicates that a molecular weight slightly above 100,000 would not be expected by one of ordinary skill in the art to affect the functionality of the disclosed polymer. From MPEP 2144.05 "... a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)". To one of ordinary skill in the art, a copolymer having a molecular weight slightly above 100,000 would have been obvious over and is substantially the same as the disclosed range.

Applicant argues that Underwood et al does not disclose adding the polymer to the sheet. Underwood et al discloses that the mixed resin solution can be effectively applied to the preformed paper (col 4, lines 39-41).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 6-10, 13-18 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al (5674362).

Underwood et al discloses adding a glyoxylated acrylamide- DADMAC polymer (GPA) and an aminopolyamide-epichlorohydrin resin (APAE) to the fibrous suspension in a papermaking process (Abstract). Note that the use of "comprising" in instant Claim 1 allows other additives to be used in the process. The APAE and GPA resins can be added independently (col 4, lines 58-60). The GPA polymer contains from 75-95% (meth)acrylamide by weight, and from 5-25% by weight DADMAC (col 3, lines 54-63). Using 71 and 85 for the molecular weights of acrylamide and methacrylamide respectively and 161.7 for DADMAC, the molar percentage of (meth)acrylamide is calculated to be from 85 to 98%. Up to 10 weight percent of the acrylamide monomers can be replaced by other monomers, such as acrylic acid, thus both cationic and anionic monomers can be present (col 3, lines 56-61). The vinylamide units are at least partially glyoxylated by reacting with 0.5 to 2 glyoxal molecules per acrylamide monomer (col 4, lines 6-9). The polymeric composition significantly overlaps the

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claimed composition. The total amount of the two resins added is from 1 to 20 lb/ton and the ratio of GPA to APAE is from 1:1 to 5:1, thus the GPA is added in an amount of 0.83 to 16.67 lb/ton (col 4, lines 22-25 and 41-43). Underwood et al discloses that the mixed resin solution can be effectively applied to the preformed paper (col 4, lines 39-41). It would have been obvious to one of ordinary skill in the art to add the copolymer by spraying as a well known and functionally equivalent option for surface application. The molecular weight generally has a range from about 500 to 100,000 Daltons (col 4, lines 1-4). As discussed in the Response to Arguments above, the use of copolymers having a molecular weight slightly above 100,000 would not be expected by one of ordinary skill in the art to impart substantially different functionality to the disclosed copolymer.

The copolymers disclosed by Underwood et al are capable of functioning as dewatering aids because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Claims 1-4, 6-10, 13-18 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al in view of Coscia et al (3556932).

The disclosure of Underwood et al is detailed in the above rejection.

Underwood et al does not explicitly disclose that the molecular weight of the copolymer is greater than 100,000 daltons.

Coscia et al discloses adding an aldehyde-functionalized vinylamide polymers either to preformed paper or to the fibrous suspension in a papermaking process (Abstract; col 7, lines 23-31). The polymers contain at least 50 mole percent, preferably greater than 75 mole percent, and up to 99 mole percent vinylamide (nonionic) units, which are exemplified by acrylamide (col 3, lines 42-60; col 8, Example 1, lines 9-10 and 73-75). The remainder of the monomer units in the polymer can be ionic monomers or nonionic "spacers" (such as vinyl acetate) (col 3, lines 46-49 and 58-60). Ionic monomers include cationic, such as diallyldimethyl ammonium chloride (DADMAC, also exemplified in col 3, lines 42-60; col 8, Example 1, lines 9-10 and 73-75), and anionic, such as acrylic acid (col 5, lines 69-72; col 10, Example 6, lines 45-46). The vinylamide units are partially glyoxylated so that the ratio of glyoxylated to non-glyoxylated units is from 0.06 to 0.2 (6-20% glyoxylated) (col 6, lines 59-67). The polymeric composition significantly overlaps the claimed composition. The molecular weight can be from 100,000 to 1,000,000 (col 3; lines 64-66). The copolymers of Coscia et al and the copolymers of Underwood et al are similar and are added to impart wet strength to a paper.

The art of Underwood et al, Coscia et al and the instant invention is analogous as pertaining to the addition of aldehyde-functional copolymers to paper webs. It would have been obvious to one of ordinary skill in the art at the time of the invention to add a copolymer having a molecular weight greater than 100,000 daltons to the paper of

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Underwood et al in view of Coscia et al as a functionally equivalent option. As discussed in the immediately preceding rejection, the copolymers are capable of functioning as dewatering aids because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al in view of Sanchez (6315866).

Underwood et al does not disclose a polymer containing 100% nonionic monomers.

Sanchez teaches that polyacrylamides (100% nonionic) and copolymers of polyacrylamide and α,β -unsaturated quaternary ammonium compounds (i.e.-DADMAC) are known as wet end additives to increase dry strength of paper products (col 1, lines 49-51 and 61-63). Sanchez also discloses glyoxylated polyacrylamide-DADMAC copolymers as a known dry strength additive (Abstract; col 8, lines 32-58, particularly Polymer B). Sanchez discloses acrylamide-DADMAC copolymers as dry strength agents and teaches that the copolymers provide several other advantages in papermaking processes, such as improved drainage and retention (dewatering aid), improved sheet formation and increased brightness (Abstract; col 2, line 63 to col 3, line 4 and lines 29-30).

The art of Underwood et al, Sanchez and the instant invention are analogous as pertaining to the use of glyoxylated acrylamide polymers in papermaking. Because of the similarity of function of both cationic and nonionic acrylamide polymers, and

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glyoxylated acrylamide polymers, it would have been obvious to one skilled in the art at the time of the invention to use a glyoxylated nonionic acrylamide polymer as a dewatering agent in the process of Underwood et al in view of Sanchez as a functionally equivalent option with a reasonable expectation of success.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Underwood et al in view of Carrier et al (5654198).

Underwood et al does not disclose a polymer containing zwitterionic monomers.

Carrier et al discloses that monomers used in preparing polymers useful in aqueous systems for problems associated with particulates, emulsification and flocculation (i.e.-dewatering) can be anionic, cationic and zwitterionic (col 3, lines 14-49). Carrier et al discloses copolymers comprising acrylamides and the anionic, cationic or zwitterionic monomers (col 3, lines 50-54; col 3, line 66 to col 4, line 11). Pendant aldehyde functionality is added by covalently attaching an aldehyde containing monomer to the acrylamide (col 3, line 67 to 4, line 2; col 4, lines 42-46).

The art of Underwood et al, Carrier et al and the instant invention are analogous as pertaining to the use of glyoxylated acrylamide polymers for drainage and retention in aqueous systems. It would have been obvious to one skilled in the art at the time of the invention to use a glyoxylated acrylamide polymer containing zwitterionic monomers as a dewatering agent in the process of Underwood et al in view of Carrier et al as a known functionally equivalent option.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

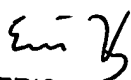
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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